Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Department of Environmental Protection

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Local Distribution and Use of Wetlands Conservancy Program Orthophoto Maps

The Wetlands Conservancy Program in the Department of Environmental Protection's Division of Wetlands and Waterways has developed "orthophoto" maps to accurately locate and delineate the state's wetland resources. In addition, these maps are an excellent medium-scale (1" = 417' scale) planning tool. The "photo base" of the maps makes them an extremely accurate and comprehensive record of the community at a scale that displays features on the individual parcel level. As a result, these maps have a broad range of potential uses for municipal governments.

For this reason, the Wetlands Conservancy Program is giving a full set of these orthophoto maps free of charge to each community through its Conservation Commission. The following is a list of possible municipal uses for these photo-based maps.

CONSERVATION COMMISSION POTENTIAL USES

Project Review and Permitting Issues:

-- These maps include "photo-interpreted" wetland delineations that provide an accurate inventory of the town's wetlands. As a result, these maps can serve as an atlas of the community's wetland resources.

> **The wetland delineations shown on these maps do <u>not</u> substitute for a field delineation under Massachusetts General Laws c.131, §40 (the Wetlands Protection Act).**

-- Commissions should encourage project proponents to review the maps and discuss possible wetland regulation implications with the Commission prior to the submission of a Request for Determination of Applicability or Notice of Intent.

-- Ongoing projects can be recorded on the maps. Symbols can be color-coded to easily communicate the status of each project.

-- Wetlands within the community that have not been included in the photointerpretation process could be displayed. These areas will become evident during the normal course of business during the Commission's on-site visits and also could come from local knowledge. This locally developed wetland data will be very useful when the statewide wetland data layer is updated. It is anticipated this will be conducted in ten year intervals.

-- Project alternatives - an important part of the project review process - can be more easily visualized using these maps.

-- The cumulative effects of multiple projects can be better evaluated and understood by seeing the projects displayed on the maps.

It is important to note that the wetland delineations on these photo-based maps are photointerpreted and thus represent a very accurate inventory of wetlands but do not replace the wetland boundary that is determined by an on-site investigation under the Wetlands Protection Act.

Natural Resource Issues:

-- Impacts of projects that are outside the town's borders can be better recognized and understood with these maps. Since these maps are not limited by municipal boundaries, the maps of one town also include some areas of adjoining communities.

-- Ecosystems can be visualized on the maps as a unit within the context of the developed community.

-- FEMA flood zones and velocity zones can be drafted onto the maps. By displaying this data on the maps at a larger scale than the FEMA maps, the data will be easier to visualize.

-- River watershed basin boundaries can be displayed on the maps. Also, the maps can provide better projected runoff estimates as compared to the USGS topographical maps currently used.

-- Estimated rare and endangered species habitats can be displayed on the maps. The large scale of the maps makes habitat analysis possible without lengthy field work.

-- Vernal pools can be displayed on the maps.

-- Public and private drinking water wells can be displayed.

Also, the watershed areas contributing to these important resources can be delineated and regulated.

-- The community's open space and conservation land can be delineated on the maps. Management of these lands can be coordinated using the maps. Proposed new acquisitions can be better visualized on the maps.

-- Known areas of hazardous contamination and pollution can be accurately displayed and investigated.

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PLANNING BOARD POTENTIAL USES

-- These maps provide an accurate planning scale inventory of the community's wetlands, highway infrastructure, and real estate base.

-- The accuracy of the maps would allow them to be used as a base for any type of zoning overlay district. These maps exceed National Map Accuracy Standards.

-- If the separate map sheets were joined together to make one community map, it could serve as a photo-based zoning map.

-- The maps could serve as a base upon which to develop "build-out" projections. Since every square inch of the community's land area is photo displayed, a complete assessment of developable land is possible.

-- Transportation planning can be more easily conducted using the maps of the community's roads and highways.

BOARD OF HEALTH POTENTIAL USES

-- Often, the Board of Health doesn't have the expertise to accurately determine the upland limits of wetlands. As the Massachusetts Title 5 regulations require setbacks from wetlands, the maps will be used frequently by health agents and developers working with the Conservation Commission.

-- The maps can be used to display soils information, which is important in the location of properly-functioning septic systems. Also, observed groundwater levels could be displayed on the maps.

-- Percolation (perc) test records can be displayed on the maps to provide information about poorly-drained sites.

-- The maps provide a visual base for a community's epidemiological studies, such as outbreaks of Lyme Disease and giardia, as well as other health issues that require the use of geographic referencing.

-- The maps can be used to more effectively direct seasonal mosquito control activities by identifying wetland target sites for specific mosquito control applications, thus eliminating the need for expensive field reconnaissance; and by identifying sensitive receptors and "no spray zones," maximizing the mosquito control strategy to the intended sites.

HAZARDOUS WASTE COMMITTEE POTENTIAL USES

-- These maps could serve as a visual inventory of:

    -- known hazardous waste clean-up sites;

    -- underground fuel storage tanks. Tank inspections and leak history can be recorded on the maps; and

    -- known hazardous waste storage facilities (this data can be shared with the fire and police departments).

BUILDING INSPECTOR POTENTIAL USES

-- The maps provide an inventory of a community's wetlands data, which could be consulted when issuing building permits. (FEMA floodplain information also could be included.)

-- A full set of these maps can be displayed within or near the Building Inspector's Office for informational purposes.

ASSESSOR'S OFFICE POTENTIAL USES

-- These photo-based maps can be used as a visual reference for locating property on the appropriate tax map.

-- The maps serve as an accurate historical record of all the real estate parcels (and rights-of-way) within a community.

-- There is the potential to use the photo-based maps as a medium-scale base in a GIS of taxable properties within the community. This Land Information System could include parcel attribute data and other sociological information important to the community's database.

[See below for a discussion of digital potential for the map.]

SELECTMEN'S OFFICE POTENTIAL USES

-- A set of the maps can be prominently displayed in a very accessible location in the Town Hall Building. All levels of municipal government might be encouraged to use them.

POLICE AND FIRE DEPARTMENT POTENTIAL USES

-- The maps could be used to develop an emergency response database.

DEPARTMENT OF PUBLIC WORKS POTENTIAL USES

-- The maps provide a photo base of all facilities and structures and could be useful in facility and maintenance planning.

POTENTIAL DIGITAL APPLICATIONS OF THE ORTHOPHOTO BASE MAP

Here are two of the many uses for the digital version of the photo-based maps:

1. Digital scanning of the orthophoto map produces a raster file with approximately 0.5 meter resolution. The file size is 25 megabytes. This product would provide personal computer terminal access to the map data. Information such as roads, utilities, and structures could be taken from the computer screen in vector form.

2. Tax parcel map data can be combined with the raster base or a photographic image of the orthophoto map to register that data to the medium-scale accuracy of the map series. This product would provide the community with a photo-based correction of the tax map series. As with all tax map data, the maps represent only an approximation of the deed-defined parcel dimensions, but the combined map connects the tax parcel map series to the ground control network of the orthophoto maps.